

Genetics Background

Name: _____ Period: _____

Vocabulary: Define the following words.

- Fertilization:
- Genetics:
- Gene:
- Allele:
- Phenotype:
- Genotype:
- Homozygous:
- Heterozygous:
- Hybrid:
- Purebred:
- Principle/Rule of Dominance:
- Law of Segregation:
- Law of Independent Assortment:

Genotype versus phenotype:

1. What is an example phenotype for eye color? _____
2. What is an example genotype for eye color? _____
3. Which determines which? (Does phenotype determine genotype or does genotype determine phenotype?)

Background:

1. Which case of letter (upper or lower case) represents a dominant trait? _____
2. Which case of letter (upper or lower case) represents a recessive trait? _____

Homozygous or Heterozygous? Identify each as homozygous or heterozygous.

- | | |
|-------------|-------------|
| 1. DD _____ | 7. Bb _____ |
| 2. Ff _____ | 8. Ee _____ |
| 3. nn _____ | 9. RR _____ |

How do you show the genotype?:

- | | |
|-----------------------|-------------------------------|
| 1. Hybrid _____ | 3. Homozygous Dominant _____ |
| 2. Heterozygous _____ | 4. Homozygous Recessive _____ |

Using phenotype to identify genotype: Brown eyes are dominant to blue eyes, eye color is denoted with the letter “B”. Brown hair is dominant over blond hair, hair color is denoted using the letter “H”. Write the genotype for the following phenotypes.

1. Heterozygous brown eyes _____
2. Homozygous blue eyes _____
3. Heterozygous brown hair _____
4. Homozygous blond hair _____
5. Heterozygous brown eyes and heterozygous brown hair _____
6. Homozygous brown eyes and heterozygous brown hair _____
7. Homozygous brown eyes and homozygous blond hair _____
8. Homozygous blue eyes and heterozygous brown hair _____

Using genotype to identify phenotype: Write the phenotype that would result from the following genotypes.

1. BBhh _____
2. BbHh _____
3. bbHH _____
4. Hhbb _____
5. HhBb _____
6. HHBB _____

Monohybrid Crosses: Indicate the possible offspring that would result from the following crosses:

1. **BB x Bb**

- i. What is the phenotypic ratio of the offspring? _____
- ii. What is the genotypic ratio of the offspring? _____

2. **Bb x Bb**

- i. What is the phenotypic ratio of the offspring? _____
- ii. What is the genotypic ratio of the offspring? _____

Dihybrid Cross: Indicate the possible offspring that would result from the following cross:

1. **BbHh x BbHh**

- i. How many offspring will have brown eyes and brown hair?
- ii. How many offspring will have brown eyes and blonde hair?
- iii. How many offspring will have blue eyes and brown hair?
- iv. How many offspring will have blue eyes and blonde hair?